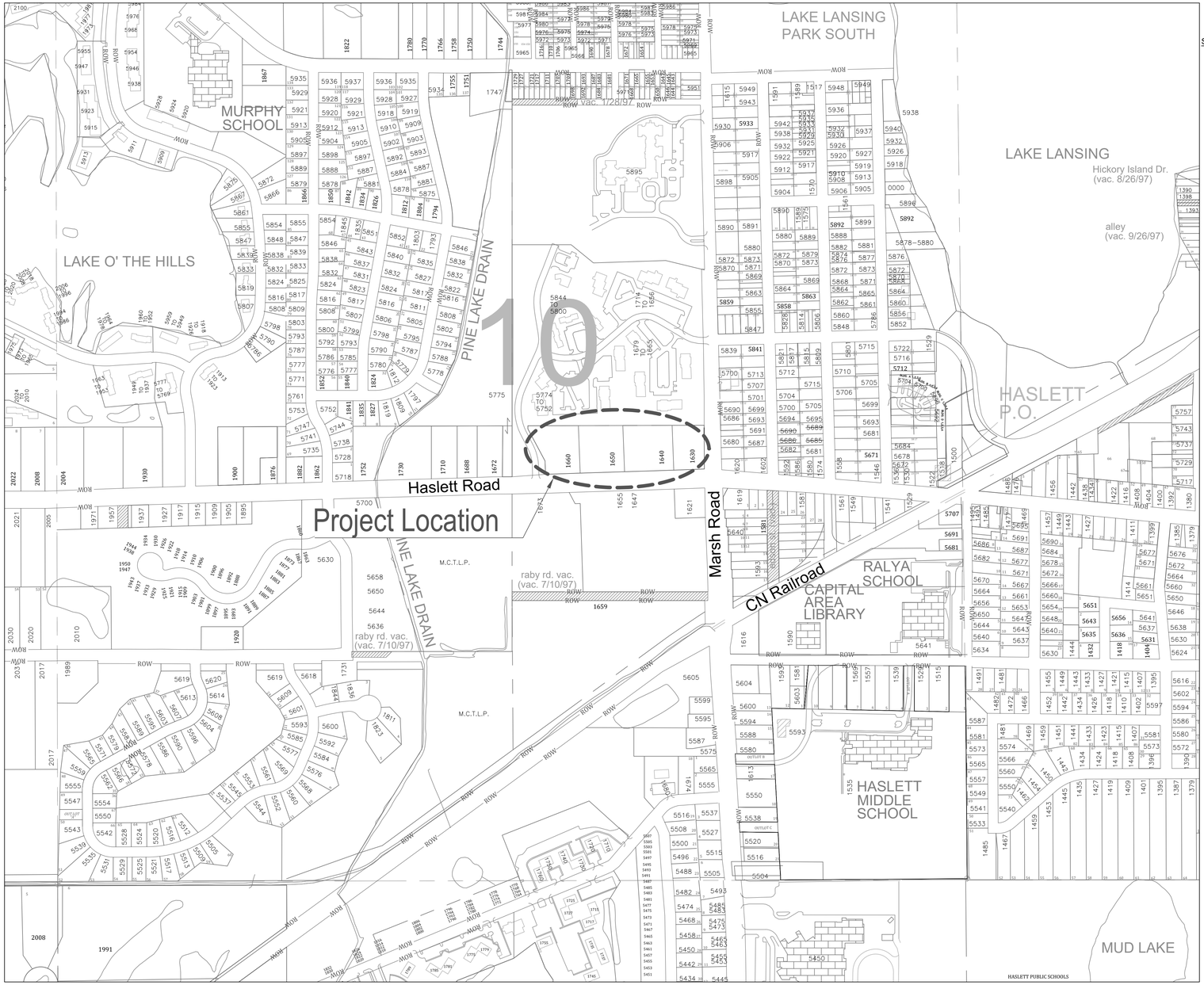
Haslett Commerce Center Watermain- 2026

CONSTRUCTION PLANS
FOR
MERIDIAN CHARTER TOWNSHIP
INGHAM COUNTY, MICHIGAN

UTILITY COMPANY	UTILITIES
AT&T 337 N. ABBOTT, RM. 201 EAST LANSING, MI 48823 517.337.3660	TELEPHONE
CONSUMERS ENERGY 530 W. WILLOW ST. P.O. BOX 30162 LANSING, MI 48909 517.373.6100	GAS ELECTRIC
COMCAST 1070 TROWBRIDGE ROAD EAST LANSING, MI 48823 517.332.1012	CABLE TV
MERIDIAN CHARTER TOWNSHIP 5151 MARSH RD. OKEMOS, MI 48864 517.853.4440	WATER MAINS SANITARY SEWER PATHWAYS
WOLVERINE PIPE LINE 8105 VALLEYWOOD LANE PORTAGE, MI 49024-5251 231.323.2491	PETROLEUM PIPELINE
INGHAM COUNTY DRAIN COMMISIONER 707 BUHL ST. MASON, MI 48854 517.676.8395	DRAINS STORM SEWER
INGHAM COUNTY ROAD DEPT 301 BUSH ST. MASON, MI 48854 517.676.9722	PUBLIC ROADS AND RIGHTS OF WAY



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STANDARD CONSTRUCTION NOTES

1. The Contractor shall notify the Charter Township of Meridian, Department of Public Works, Office of Engineering 517-853-4440 a minimum of 72 hours prior to the start of construction of public utilities or of construction within the public right-of-way.
2. All construction shall conform to the current standards and specifications of the Charter Township of Meridian which are included as part of these plans in effect at the time of construction.
3. After the completion of construction of public utilities or construction within public right-of-way, the contractor must request a final inspection. Any punchlist items resulting from the final inspection must be resolved prior to final release and acceptance.
4. The existing utilities indicated on the plans are in accordance with available information. It shall be the contractor's obligation to verify the exact location of all existing utilities, which might affect this job.
5. The contractor shall notify "MISS DIG" 1-800-482-7171 at least 72 hours prior to the start of construction.
6. The contractor shall at all times be aware of inconvenience caused to the abutting property owners and the general public. Where the contractor does not remedy undue inconveniences, the Charter Township of Meridian, upon four hours notice, reserves the right to perform the work and deduct the cost therefore from the money due the contractor.
7. A Registered Land Surveyor provided by the contractor at the contractor's expense shall replace all property irons and monuments disturbed or destroyed by the contractor's operations.
8. Contractor shall provide Owner and Township Engineer a copy of written permission to use private property for storage of equipment and materials or for his construction operations.
9. Trench backfill under existing or proposed roadways, driveways, and parking areas, shall be sand or gravel, placed in 12" layers (maximum) and consolidated to 95% of maximum density as measured by modified proctor unless otherwise noted.
10. Trees and shrubs are to be protected during construction and bored where necessary.
11. Existing fences shall be removed and restored to their original condition or better where in conflict with construction.
12. Driveways, culverts, ditches, drain tile, tile fields, drainage structures, etc., that are disturbed by the contractor's operations shall be immediately restored.
13. All established lawn areas disturbed by the contractor's operations shall be resodded with matching sod. All other areas shall be seeded and mulched. Seeding and mulching shall be done in accordance with the General Specifications.
14. All ditch slopes shall have established vegetation and be protected from erosion.
15. All utility poles in close proximity to construction shall be supported in a manner satisfactory to the utility owner.
16. Onsite parking and sanitary facilities shall be provided for construction workers. The facilities shall be constructed and operated (with minimal impact to the surrounding area) to the satisfaction of the Township.

WATER MAIN NOTES

1. Hydrant elevations and gate well tap elevations shall be set to existing ground elevations unless otherwise directed by the Township Engineer.
2. All water mains shall be constructed with 5 feet of cover below finish grade, unless otherwise indicated on the plans.
3. Connection to the existing water main shall not be made until after the successful completion of pressure and bacteriological tests. Pressure testing shall be performed in accordance with AWWA C600. Additionally, all corporation stops for proposed house services shall be installed prior to pressure testing. Disinfection and bacteriological testing shall be in accordance with the AWWA C651. Before the mains are chlorinated, they shall be thoroughly flushed. All mains shall be chlorinated for a period of at least twenty-four (24) hours. Chlorine shall be added in sufficient quantity to give a 50-ppm residual of free chlorine after a twenty-four (24) hour period. After completion of the chlorine procedure, the main shall be flushed. Then water samples shall be taken from the main for bacteriological tests. If the tests should result in unsafe conditions, the chlorinating shall be repeated by the Contractor. Two consecutive passing samples at least 24 hours apart must be obtained before the main can be connected to the existing water system.
4. All valves shall be counter-clock wise open.
5. All fire hydrants shall be EJIW 5BR (54915) Traffic Type with breakaway flange or approved equal.
6. Hydrants shall be painted OSHA red.
7. Two brass wedges shall be installed at each joint on ductile iron pipe.
8. Polyethylene encasement of pipes will be required in all areas. The encasement shall be V-Bio® Enhanced Polyethylene Encasement, in accordance with ANSI/AWWA C105/A21.5, installed per the manufacturer's instructions.
9. For existing lines: service taps, shut off valves, and service line extensions to the property shall be made by Township Department of Public Works personnel for connections 2" and smaller.
10. Where water mains must dip to pass under a storm sewer or sanitary sewer, the sections which are deeper than normal shall be kept to a minimum length by the use of 45, 22½ or 11¼ degree bends properly restrained.
11. All manhole covers shall bear the legend "Meridian Water" with tree logo, where available.
12. Lead content requirements for all pipes, piping fittings, plumbing fittings, and fixtures that are used for potable water shall comply with NSF/ANSI 372 Standard.
13. All mechanical joints and fittings shall be restrained using MEGALUG® style restraints, or approved equal. All exposed metal components of the restrained-joint system shall be treated with a corrosion resistant coating, including: the collar, breakaway bolts, wedges, and connecting nuts and bolts.

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

Meridian Charter Township
Ingham County, Michigan
Watermain

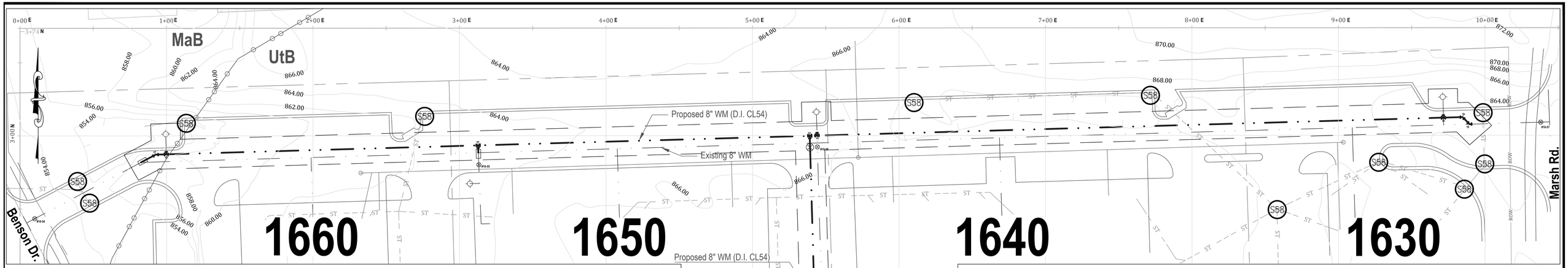
Haslett Commerce Center Watermain - 2026
Section 10, T4N, R1W, Meridian Township,
Ingham County, Michigan

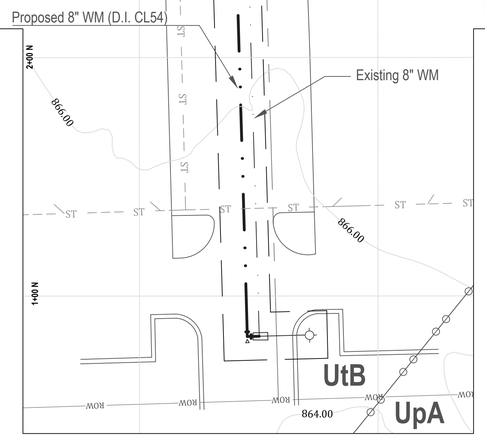
DRAWN BY: TH | CHECKED BY: YI

REVISIONS:

DATE	BY:	COMMENTS:
6/24/26	TH	Bid Set

SHEET 1 OF 4





SESC Legend:
- Soil Boundaries
- Limits of Disturbance
- Contours (xxx)

SOIL TYPES

UtB - URBAN LANDS, MARLETTE COMPLEX, 2 TO 12 PERCENT SLOPES
UpA - URBAN LAND-CAPAC-COLWOOD COMPLEX, 0 TO 4 PERCENT SLOPES
MaB - MARLETTE FINE SANDY LOAM, 2 TO 6 PERCENT SLOPES

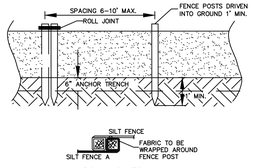
CONSTRUCTION SCHEDULE AND SEQUENCING 2026	START DATE	COMPLETE	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
PLACE AND MAINTAIN TEMPORARY EROSION CONTROLS														
INSTALL WATERMAIN														
SITE RESTORATION														
FINAL INSPECTIONS & TEMPORARY EROSION REMOVAL														

CONSTRUCTION SCHEDULE AND SEQUENCING 2027	START DATE	COMPLETE	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
PLACE AND MAINTAIN TEMPORARY EROSION CONTROLS														
INSTALL WATERMAIN														
SITE RESTORATION														
FINAL INSPECTIONS & TEMPORARY EROSION REMOVAL														

SOIL EROSION & SEDIMENTATION CONTROL NOTES

1. All soil erosion and sediment control (SESC) work shall conform to the standards and specifications of the Ingham County Drain Commissioner's Office and Meridian Township.
2. Daily inspections shall be made by the contractor for effectiveness of SESC measures. Any necessary repairs shall be performed without delay.
3. Erosion of any sediment from work on the site shall be contained on-site and not allowed to collect on any off-site areas or in waterways. Waterways include both natural and man-made open ditches, streams, storm drains, lakes, ponds, and wetlands.
4. The Contractor shall apply temporary SESC measures when required and as directed on these plans. The Contractor shall remove temporary measures as soon as permanent stabilization of slopes, ditches, and other changes have been established.
5. Staging the work shall be done by the Contractor as directed in these plans and as required to ensure progressive stabilization of disturbed earth.
6. Soil erosion control practice shall be established in the early stages of construction by the Contractor. Sedimentation control practices shall be applied as a perimeter defense against any transporting of soil off the site.
7. The Contractor shall preserve natural vegetation as much as possible.
8. Vegetative stabilization of all disturbed areas shall be established within 5 days of completion of the final grading.

S51 SILT FENCE



MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S51 SILT FENCE SPECIFICATIONS

When
- A temporary measure for preventing sediment movement.

Why
- Used to prevent sediment suspended in runoff from leaving an earth change area.

Where
- Use adjacent to critical areas, wetlands, base of slopes, and watercourses.

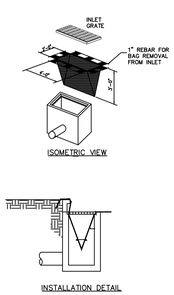
How
1. Install parallel to a contour.
2. The silt fence should be made of woven geotextile fabric.
3. Silt fence should accomodate no more than 1/2 to 1 acre of drainage per 100' of fence and on slopes less than 1:2 (v:h).
4. Dig a 6" trench along the area where the fence is to be installed.
5. Place 6" of the silt fence bottom flap into the trench.
6. Backfill the trench with soil and compact the soil on both sides. Create a small ridge on the up-slope side of the fence.
7. Install wooden stakes 6 – 10' apart and drive into the ground a minimum of 12".
8. Staple the geotextile fabric to the wooden stakes.
9. Join sections of silt fence by wrapping ends together (See drawing).

Maintenance
- Inspect frequently and immediately after each storm event. Check several times during prolonged storm events. If necessary, repair immediately.
- If the sediment has reached 1/3 the height of the fence, the soil should be removed and disposed of in a stable upland site.
- The fence should be re-installed if water is seeping underneath it or if the fence has become ineffective.
- Silt fence should be removed once vegetation is established and up-slope area has stabilized.

Limitations
- Silt fence may cause temporary ponding and could fail if too much water flows through the area.
- Do not use in areas with concentrated flows.
- Chance of failure increases if fence is installed incorrectly or if sediment accumulation is not removed.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S58 INLET PROTECTION – FABRIC DROP



MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S58 INLET PROTECTION – FABRIC DROP SPECIFICATIONS

When
- When sediment laden stormwater requires treatment before entering a stormwater drainage system.

Why
- To prevent sediment from entering stormwater systems.

Where
- Use in or at stormwater inlets, especially at construction sites or in streets.

How
1. A filter fabric bag is hung inside the inlet, beneath the grate.
2. Replace grate, which will hold bag in place.
3. Anchor filter bag with 1" rebar for removal from inlet.
4. Flaps of bag that extend beyond the bag can be buried in soil in earth areas.

Maintenance
- Drop inlet filters should be inspected routinely and after each major rain event.
- Damaged filter bags should be replaced.
- Clean and/or replace filter bag when 1/2 full.
- Replace clogged fabric immediately.
- If needed, initiate repairs immediately upon inspection.
- Remove entire protective mechanism when upgradient areas are stabilized and streets have been swept.

Limitations
- Can only accommodate small flow quantities.
- Requires frequent maintenance.
- Ponding may occur around storm drains if filter is clogged.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

E8 PERMANENT SEEDING SPECIFICATIONS

When
- To finalize stabilization of temporary seeding areas or when an area needs permanent stabilization following completion of construction. Also used when vegetative establishment can correct existing soil erosion or sedimentation problem.
- Within 5 days of final grade.

Why
- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.

Where
- Used on construction and earth change sites which require permanent vegetative stabilization.

How
1. Review SESC plan and construction phasing to identify areas in need of permanent vegetative stabilization.
2. Select perennial grass and ground cover for permanent cover.
3. Seed mixes vary. However, they should contain native species.
4. Seed mixes should be selected through consultation with a certified seed provider and with consideration of soil type, light, moisture, use applications, and native species content.
5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.0.
6. Prepare a 3–5" deep seedbed, with the top 3–4" consisting of topsoil.
7. Slopes steeper than 1:3 should be roughened.
8. Apply seed as soon as possible after seedbed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical drills.
9. Mulch immediately after seeding.
10. Dormant seed mixes are for use after the growing season, using seed which lies dormant in the winter and begins growing as soon as site conditions become favorable.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

E8 PERMANENT SEEDING SPECIFICATIONS

How (cont.)
11. Protect seeded areas from pedestrian or vehicular traffic.
12. Divert concentrated flows away from the seeded area until vegetation is established.

Maintenance
- Inspect weekly and within 24 hours following each rain event in the first few months following installation to be sure seed has germinated and permanent vegetative cover is being established.
- Add supplemental seed as necessary.

Limitations
- Seeds need adequate time to establish.
- May not be appropriate in areas with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

E8 PERMANENT SEEDING

Planting Zones:		Lower Peninsula (South of T20N) Zone 1	Lower Peninsula (North of T20N) Zone 2	Upper Peninsula Zone 3
Seeding Window	Permanent Seeding	4/15 – 10/10	5/1 – 10/1	5/1 – 9/20
Seeding Window	Dormant Seeding*	11/15 – Freeze	11/1 – Freeze	11/01 – Freeze

Source: Adapted from MDOT Interim 2003 Standard Specifications for Construction

	Zone 1 Lower Peninsula South of U.S. 10	Zone 2 Lower Peninsula North of U.S. 10	Zone 3 Upper Peninsula
Seeding Dates (with Irrigation or Mulch)	4/1 – 8/1	5/1 – 9/20	5/1 – 9/10
Seeding Dates (w/o Irrigation or Mulch)	4/1 – 5/20 or 8/10 – 10/1	5/1 – 6/10 or 8/1 – 9/20	5/1 – 6/15 or 8/1 – 9/20
Dormant Seeding Dates	11/1 – Freeze	10/25 – Freeze	10/25 – Freeze

Source: Adapted from USDA NRCS Technical Guide #342 (1999)

* Dormant seeding is for use in the late fall after the soil temperature remains consistently below 50 F, prior to the ground freezing. This practice is appropriate if construction on a site is completed in the fall but the seed was not planted prior to recommended seeding dates. No seed germination will take place until spring. A cool season annual grass may be added in an attempt to have some fall growth.
- Mulch must be used with dormant seed.
- Do not seed when the ground is frozen or snow covered.
- Do not use a dormant seed mix on grassed waterways.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

PINE
DECID.
BUSH
STUMP
C.B.
SAN. MH
F.H.

CATV BOX
TELE. MH
U.P. W/ GUY WIRE
STREET SIGN
SIGN
SAN. MH
STM. MH
TELE. BOX
WTR. MH

CATV MH
LIGHT
SOIL BORING
MAILBOX
P.I.
C.M.P.
C.B.
G.V.
F.H.

CATV (COMCAST) — CATV — CATV
℄ OF ROADS
ELEC. ABOVE GROUND — OH-ELEC
ELEC. UNDERGROUND — UG-ELEC
GAS (CONSUMERS) — GAS — GAS
TELE. (COMM)
PROPERTY LINE
R.O.W. (I.C.R.C., MDOT) — ROW

EX. SAN. MAIN — SAN — LESS BOLD
EX. STM. (I.C.D.C.) — ST — ST — LESS BOLD
EX. WTR. MAIN — WM — LESS BOLD
PROPOSED SAN. — SAN — BOLD
PROPOSED STM. — ST — ST — BOLD
PROPOSED WTR. — WM — BOLD
PROPOSED 7' PATHWAY

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

Meridian Charter Township
Ingham County, Michigan
Watermain

Haslett Commerce Center Watermain - 2026
Section 10, T4N, R1W, Meridian Township,
Ingham County, Michigan

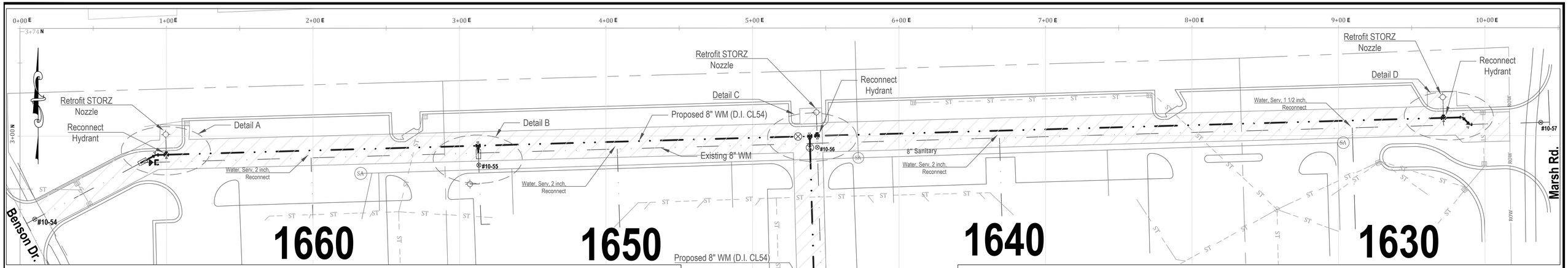
DRAWN BY: TH | CHECKED BY: YI

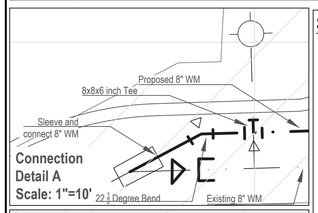
REVISIONS:

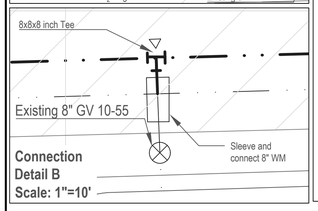
DATE	BY:	COMMENTS:
6/24/26	TH	Bid Set

SCALE: 1" = 30' HOR. (0 – 30')

SHEET 2 OF 4

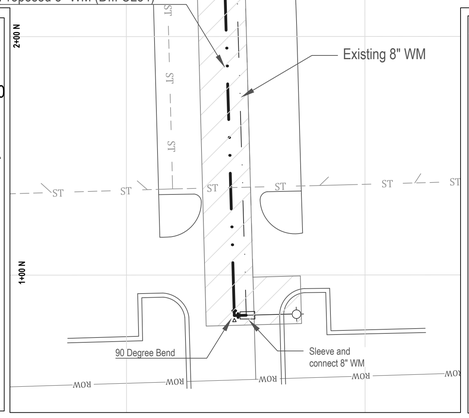






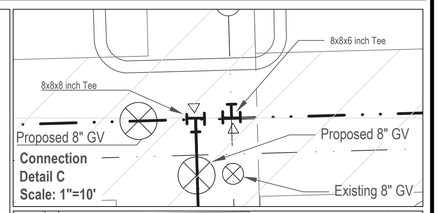
SUGGESTED PROCEDURE:

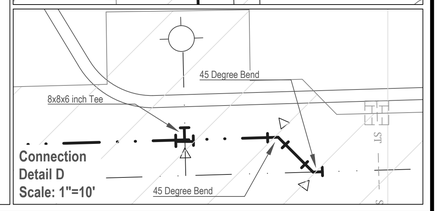
1. Close existing GV 10-54 and GV 10-57
2. Cut and cap existing 8" WM East of existing bend at STA 0+82 E and install a temporary thrust block and standpipe
3. Open existing GV 10-57
4. Install proposed 8" WM from STA 0+82 E to STA 9+90 E including proposed bends and tees, connecting to existing 8" WM at STA 0+82
5. Install proposed 8" WM from STA 3+00 N to STA 0+83 N including proposed 8" GV 10-56, capping with standpipe
6. Pressure and bacteria test proposed 8" main between STA 0+82 E and STA 9+90 E and between STA 3+00 N and STA 0+83 N
7. Close existing GV 10-56
8. Connect proposed 8" WM to existing 8" WM at STA 0+83 N
9. Close existing GV 10-57
10. Transfer water services at 1630, 1640, 1650, and 1660 Haslett Road
11. Connect proposed 8" WM to existing 8" WM at STA 9+90 E
12. Open existing GV 10-57, GV 10-54, and new GV 10-56
13. Abandon Existing 8" WM between STA 0+82 E and STA 9+90 E and between STA 3+00 N and STA 0+83 N

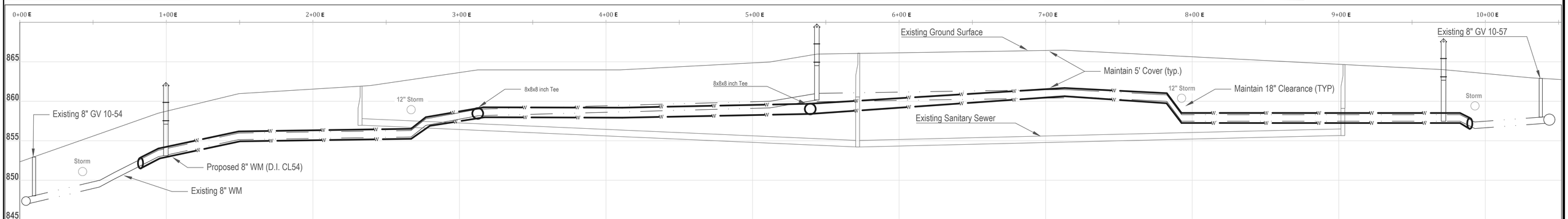


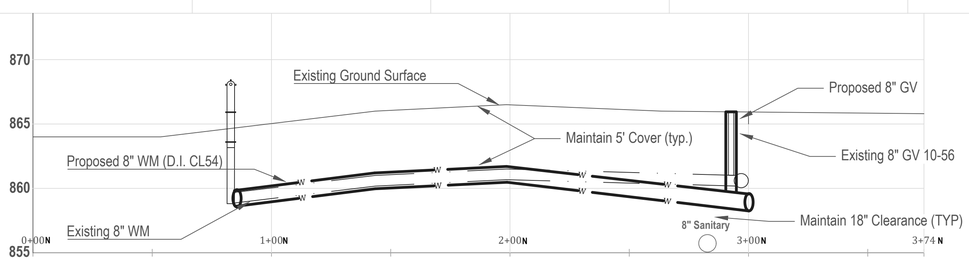
PAY ITEMS & QTS (THIS SHEET):

1.	Pavt, Rem, Asphalt	11380	SF
7.	Water, Main, 8 inch, Abandon	1	LS
8.	Water, Main, 8 inch, Install	1138	FT
9.	Water, Sleeve, 8 inch	3	EA
10.	Water, 22 1/2 degree bend, 8 inch	1	EA
11.	Water, 45 degree bend, 8 inch	2	EA
12.	Water, 90 degree bend, 8 inch	1	EA
13.	Water, Tee, 8x8x8 inch	2	EA
14.	Water, Tee, 8x8x6 inch	3	EA
15.	Water, Gate Valve, 8 inch	2	EA
16.	Water Serv, 1 1/2 Inch, Reconnect	1	EA
16.	Water Serv, 2 Inch, Reconnect	3	EA
17.	Water, Hydrant, Reconnect	3	EA
18.	Water, Hydrant, STORZ Nozzle	3	EA
19.	HMA, 13A	280	TN
20.	Curb and Gutter, Rem	130	FT
21.	Curb and Gutter, Inst	130	FT









BENCHMARK #1 ELEV. = 863.05 (NAVD88)
SOUTHWEST FLANGE BOLT OF FIRE HYDRANT, UNDER THE "A" IN "TRAVERSE CITY", 18'± EAST AND 80'± NORTH OF NORTHEAST CORNER OF #1655 HASLETT ROAD.

PINE
DECID.
BUSH
STUMP
C.B.
SAN. MH
F.H.

CATV BOX
TELE. MH
U.P. W/ GUY WIRE
STREET SIGN
SIGN
SAN. MH
STM. MH
TELE. BOX
WTR. MH

CATV MH
LIGHT
SOIL BORING
MAILBOX
P.I.
C.M.P.
C.B.
G.V.
F.H.

CATV (COMCAST) — CATV — CATV
℄ OF ROADS
ELEC. ABOVE GROUND — OH-ELEC
ELEC. UNDERGROUND — UG-ELEC
GAS (CONSUMERS) — GAS — GAS
TELE. (COMM)
PROPERTY LINE
R.O.W. (I.C.R.C., MDOT) — ROW
EASEMENT

EX. SAN. MAIN — SAN — LESS BOLD
EX. STM. (I.C.D.C.) — ST — ST — LESS BOLD
EX. WTR. MAIN — WM — LESS BOLD
PROPOSED SAN. — SAN — BOLD
PROPOSED STM. — ST — ST — BOLD
PROPOSED WTR. — WM — BOLD
7' PATHWAY

Call 811 before you dig.

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Ingham County, Michigan
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Section 10, T4N, R1W, Meridian Township,
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DRAWN BY: TH
CHECKED BY: YI

REVISIONS:

DATE	BY:	COMMENTS:
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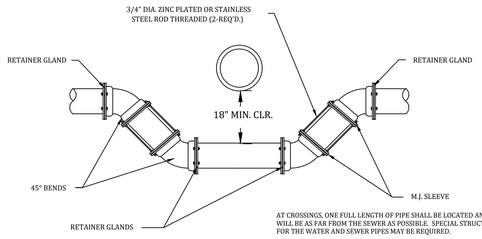
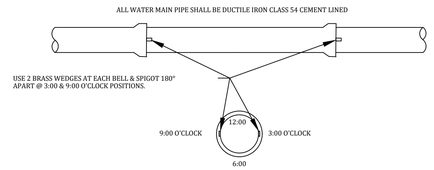
SCALE: 1" = 30' HOR.
1" = 5.5' VER.
0 30' 5.5'

SHEET 3 OF 4

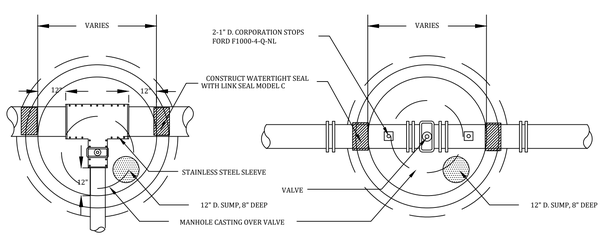


LOWERING WATER MAIN CROSS SECTION

ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED

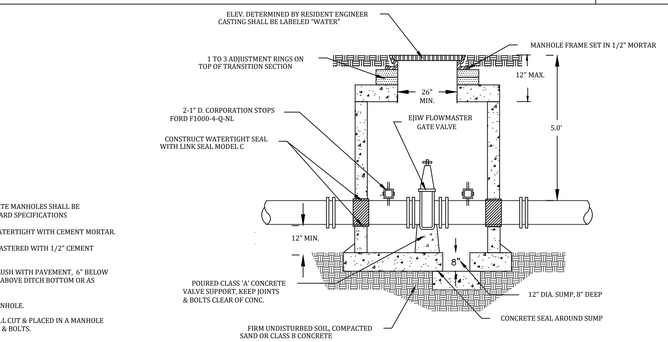


WATER MAIN JOINT DETAILS



TAPPING VALVE PLAN VIEW

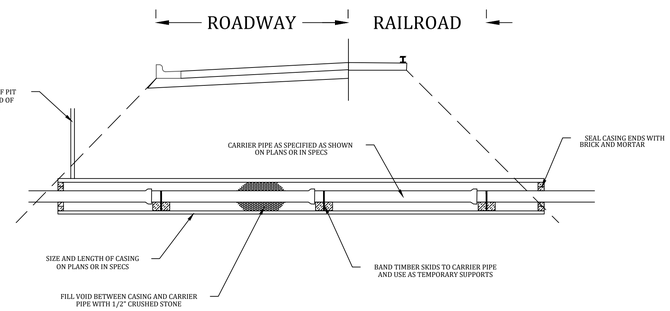
TYPICAL IN-LINE VALVE PLAN VIEW



NOTES

1. PRECAST REINFORCED CONCRETE MANHOLES SHALL BE TO CURRENT ASTM C478 STANDARD SPECIFICATIONS
2. ALL JOINTS SHALL BE MADE WATERTIGHT WITH CEMENT MORTAR.
3. ADJUSTING RINGS SHALL BE PLASTERED WITH 1/2" CEMENT MORTAR ON THE OUTSIDE.
4. MANHOLE COVER TO BE SET FLUSH WITH PAVEMENT, 6" BELOW SURFACE OF GRAVEL ROADS, 6" ABOVE DITCH BOTTOM OR AS SPECIFIED ON PLANS.
5. CENTER THE VALVE IN THE MANHOLE.
6. TAPPING VALVES SHALL BE FULL CUT & PLACED IN A MANHOLE WITH STAINLESS STEEL SLEEVE & BOLTS.

TYPICAL IN-LINE VALVE MANHOLE CROSS SECTION

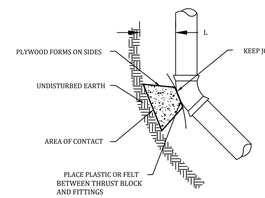


NOTES

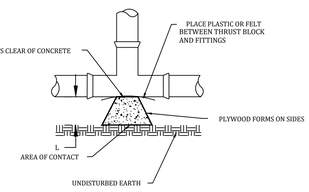
1. WORK IN ROADS AND IN RAILROAD RIGHT-OF-WAYS SHALL BE IN ACCORDANCE WITH THE APPROPRIATE REGULATORY AGENCY'S REQUIREMENTS.
2. CASING PIPE SHALL BE ASTM 139, GRADE B OR ASTM A-53, GRADE B OR API 5-L, GRADE B OR API GRADE B WITH 0.375" MINIMUM WALL THICKNESS.

CASING INSTALLATION DETAIL FOR ROADS & RAILROADS

CASING AND CARRIER PIPE TO BE INSTALLED BY METHOD OTHER THAN OPEN CUT
ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED



BENDS



TEES

THRUST BLOCK PLAN VIEWS

NOTES

1. A THRUST BLOCK SHALL BE 3000 psi TRANSIT MIX CONCRETE
2. THRUST BLOCKS SHALL BE BUILT WITH PLYWOOD FORMS FOR THE SIDES

TEES, PLUGS & HYDRANTS	
PIPE DIAMETER IN INCHES	'L' IN FEET
4 & 6	2.0
8,10 & 12	2.5
16	3.0
20	4.0

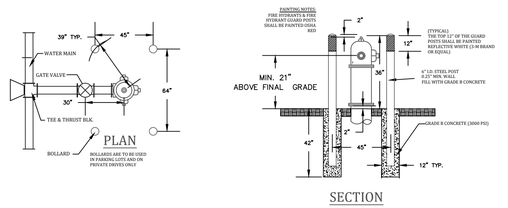
THRUST FORCE (LBS)

PIPE SIZE	TEE OR PLUG	90 BEND	45 BEND	22 1/2 BEND
4"	1,900	2,700	1,500	740
6"	4,250	6,000	3,250	1,660
8"	7,540	10,670	5,770	2,940
10"	12,000	16,750	9,100	4,650
12"	16,970	23,990	12,980	6,620
16"	30,100	42,600	23,100	11,800

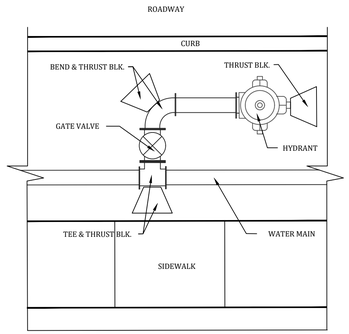
SOIL	SAFE BEARING LOAD (LBS/SQ. FT.)
MUCK, PEAT & ETC...	0
SOFT CLAY	1,000
SAND	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED W/CLAY	4,000
HARD COMPACTED CLAY	5,000

EXAMPLE: TYPICAL REQUIRED CALCULATION FOR A THRUST BLOCK (6" - 90° BEND IN SAND)

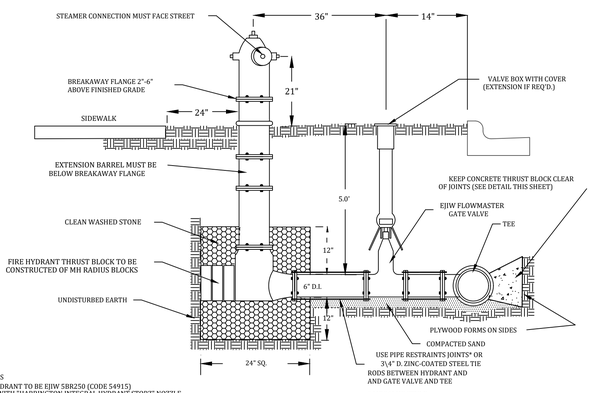
$$\text{AREA OF CONTACT} = \frac{\text{THRUST FORCE (LBS)}}{\text{SAFE BEARING LOADS}} = \frac{6{,}000 \text{ LBS.}}{2{,}000 \text{ LBS./SQ. FT.}} = 3 \text{ SQ. FT.}$$



BOLLARDS AROUND FIRE HYDRANT



ALTERNATE LAYOUT FOR CONFINED AREAS



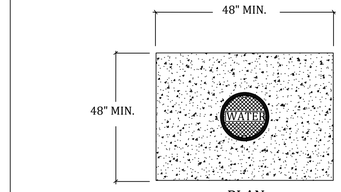
NOTES

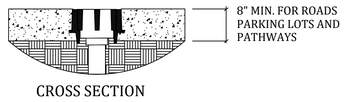
1. HYDRANT TO BE EJIW 5BR250 (CODE 54915) WITH "HARRINGTON INTEGRAL HYDRANT STORZ" NOZZLE
2. HYDRANT DRAIN SHALL BE PLUGGED
3. STONE SHALL NOT BE PLACED AROUND THE HYDRANT VALVE.
4. GATE VALVES SHALL BE EJIW FLOWMASTER

* MEGALUG STYLE

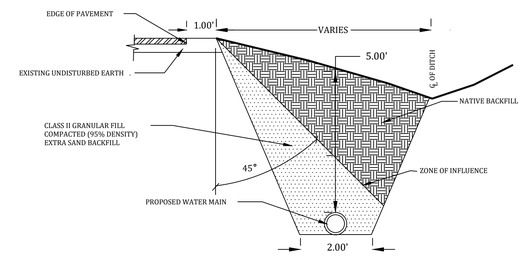
TYPICAL HYDRANT ASSEMBLY DETAIL

ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED



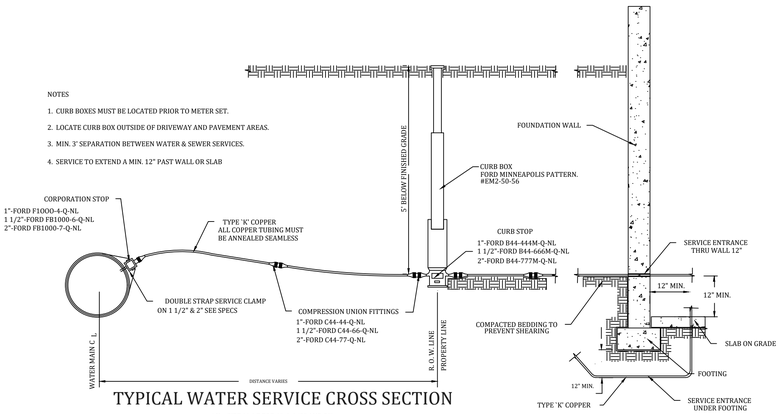


VALVES & CURB STOP BOXES IN CONCRETE



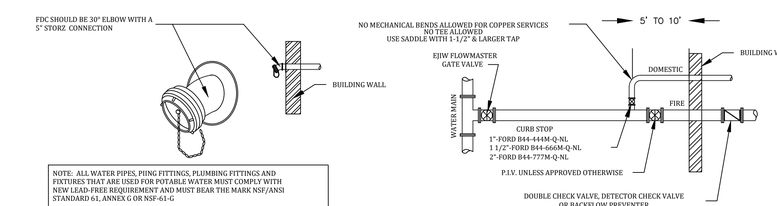
TYPE-1 TRENCH CROSS SECTION

ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED



* X = SIZE (4,6,7 FOR 1", 1-1/2" AND 2")

TYPICAL WATER SERVICE CROSS SECTION



NOTE: ALL WATER PIPES, PIING FITTINGS, PLUMBING FITTINGS AND FIXTURES THAT ARE USED FOR POTABLE WATER MUST COMPLY WITH NEW LEAD-FREE REQUIREMENT AND MUST BEAR THE MARK NSF/ANSI STANDARD 61, ANNEX G OR NSF-61-G

FIRE PROTECTION VALVING PLAN VIEW

Meridian Charter Township
Ingham County, Michigan
Watermain

Haslett Commerce Center Watermain - 2026
Section 10, T4N, R1W, Meridian Township,
Ingham County, Michigan

DRAWN BY: TH | CHECKED BY: YI

REVISIONS:		
DATE	BY:	COMMENTS:
6/24/26	TH	Bid Set

SHEET 4 OF 4